

REMARKS

In a non-final Office Action dated June 1, 2009, the Examiner in charge of the application incorrectly stated the status of the claims; Claims 21, 23-24, and 26-27 are pending and under consideration. The Examiner withdrew the finality of the previous Office Action in response to Applicants' request for continued examination. The Examiner found persuasive Applicants' arguments regarding nonobviousness of the claims over Shrewsbury in view of Bensimon, and withdrew her rejection. The Examiner further withdrew obviousness rejections over Shrewsbury in view of Bensimon and in further view of Kaiser.

The Examiner rejected Claims 21, 23-25, and 27 for alleged obviousness over Perkins *et al.* (Science 268:83-87 (1995)) in view of Bensimon. Applicants note that previously cancelled Claim 25 is impermissibly rejected. Claim 26 is rejected for alleged obviousness over Perkins in view of Bensimon and in further view of Kaiser. No document cited alone or in combination teaches or suggests Applicants' invention. In an attempt to align the cited documents' teachings with the claimed method steps, the Examiner overstated what each document teaches and ignored explicit teaching away from Applicants' invention.

Perkins does not teach or suggest micro-channels, in contrast to the Examiner's assertion (Office Action, page 6, line 11). Perkins teaches attaching DNA to latex spheres held in place below a single cover slip. A single coverslip cannot form a micro-channel because it cannot form a channel-like structure by itself. The Examiner failed to point to other structures that, together with the single coverslip, form a micro-channel. Further, Perkins does not teach or suggest a polymeric molecule attached to a micro-channel wall. Perkins' molecules are tethered to a latex sphere and deformed by constant fluid flow (Perkins' legend to Figure 1 and footnote 26), not attached to a micro-channel wall (Office Action, page 6, line 12). In fact, Perkins explicitly teaches away from adhering the molecule to a surface by stating that the molecule "was positioned away from any surface" (Perkins, page 83, second column, second paragraph) other than the latex sphere to which it is tethered. Perkins teaches suspending the microsphere-tethered DNA molecule with optical tweezers "12 μm below the surface of the cover slip" (Perkins, legend to Fig. 1). The Examiner failed to explain how the molecule could be "positioned away from any surface" and, at the same time, be attached to a surface, i.e., the micro-channel wall.

Bensimon discloses using two cover slips. The Examiner failed to explain how two glass cover slips constitute a micro-channel. Without conceding that two coverslips can define a microchannel, Bensimon expressly teaches away from using laminar flow as less efficient and, instead, teaches using capillary action/convection to align polymeric molecules. Further, Bensimon's molecules are merely attached to the surface at one end while the other end is in solution (Bensimon, column 1, lines 48-50). In contrast, at least first and second ends of Applicants' polymeric molecules attach to the micro-channel wall. Applicants amend the claims to clarify this distinction. Support for this amendment is provided, for example, by paragraph [0054] and FIG. 3.

No cited document, alone or in combination, teaches or suggests detaching the micro-channel wall, as the Examiner herself admits (Office Action, page 9, lines 6-7). This limitation was not obvious because neither Perkins nor Bensimon teach a micro-channel and, therefore, cannot suggest removing the wall of a micro-channel. The Examiner further failed to explain how one would combine the Perkins' latex spheres with the open-sided arrangement of Bensimon to arrive at the claimed micro-channel without interfering with the recited laminar flow arrangement.

Kaiser does not compensate for the shortcomings of Perkins and Bensimon as Kaiser does not contemplate using laminar flow alone to elongate and fix polymeric molecules in a micro-channel. Kaiser merely teaches treating polymeric molecules with a condensing agent.

In summary, no cited document, alone or in combination, teaches or suggests a micro-channel or a polymeric molecule adhering to a micro-channel wall as claimed, and both Perkins and Bensimon teach away from combining the two documents.

Applicants have made a diligent effort to place the pending claims into condition for allowance. Should any issues remain, Applicants respectfully request that the Examiner contact Applicants' attorney directly to expeditiously resolve them. For the reasons stated herein, this application is believed to be in condition for allowance and such action is respectfully requested.

Application No. 10/713,898
Reply to Office Action dated: 1 JUNE 2009
Examiner: Stephanie Mummert
Response dated: September 1, 2009

Fees

No fee is believed due in connection with this submission. However, if a fee is due, in this or any subsequent response, please charge the fee to Deposit Account No. 17-0055.

Likewise, no extension of time is believed due, but should any extension of time be due in this or any subsequent response, please consider this to be a petition for the appropriate extension and a request to charge the fee due to the same Deposit Account.

Respectfully submitted,

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